# SELF-CONSISTENT MEAN-FIELD THEORIES

P.-H. Heenen
*Service de Physique Nucléaire Théorique, Université Libre de Bruxelles, CP 229, B–1050 Brussels, Belgium*

I will focus this talk on a few new recent developments of mean-field methods which have largely extended their range of validity:

- different variants of mean-field models have now been extended to include vibrational and rotational correlations. I will in particular compare some recent applications to the spectroscopy of neutron deificient Pb isotopes.

- promising developments are underway to derive in a more consistent way effective interactions.

- systematic calculations of nuclear masses starting from an energy functional can now be performed within different mean-field models. I will discuss in particular the interactions which are adjusted to specifically reproduce experimentally known masses and show the progresses towards more microscopy that have been done and what still remains to be done. I will also show how systematic calculations of correlation energies open new perspectives for a purely microscopic theory of nuclear masses.